AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A waveguide group branching filter comprising:

a circular-to-square waveguide multistage transformer connected to an input port;

a branch waveguide polarizer/branching filter connected to said circular-to-square waveguide multistage transformer;

a first waveguide frequency filter connected to a branching end of said branch waveguide polarizer/branching filter;

a rectangular waveguide H-plane T-branch circuit;

a rectangular waveguide multistage transformer operably connecting one end of said branch waveguide polarizer/branching filter to said rectangular waveguide H-plane T-branch circuit;

a second waveguide frequency filter connected to said rectangular waveguide H-plane T-branch circuit; and

a third waveguide frequency filter connected to said rectangular waveguide H-plane T-branch circuit;

wherein:

a first radio wave of a first frequency band which has the polarization plane perpendicular to a branch plane of said waveguide polarizer/branching

filter, a second radio wave of said first frequency band which has the polarization plane parallel to the branch plane of said branch waveguide polarizer/branching filter, and a third radio wave of a second frequency band higher than said first frequency band which has the same polarization plane as that of said first radio wave are incident to said input port; and

said first radio wave is cut off by said first and second waveguide frequency filters and is emitted from said third waveguide frequency filter, said second radio wave is cut off by said rectangular waveguide multistage transformer and is emitted from said first waveguide frequency filter, and said third radio wave is cut off by said first and third waveguide frequency filters and is emitted from said second waveguide frequency filter.

2. (Previously Presented) The waveguide group branching filter according to claim 1, wherein the branch waveguide polarizer/branching filter is formed by a square waveguide and a single coupling hole formed for coupling said first waveguide frequency filter through one side wall of the square waveguide at the branching end of said branch waveguide polarizer/branching filter.

3. (Original) The waveguide group branching filter according to claim 1, characterized in that the branch waveguide polarizer/branching filter is formed by a square waveguide and two coupling holes formed through one side wall of

the square waveguide at the branching end of said branch waveguide polarizer/branching filter.

4. (Previously Presented) The waveguide group branching filter according to claim 1, wherein the branch waveguide polarizer/branching filter is formed by a square waveguide, a single coupling hole formed for coupling said first waveguide frequency filter through one side wall of the square waveguide at the branching end of said branch waveguide polarizer/branching filter and a thin metal sheet inserted in said square waveguide.

5. (Original) The waveguide group branching filter according claim 1, characterized in that the branch waveguide polarizer/branching filter is formed by a square waveguide, two coupling holes formed through one side wall of the square waveguide at the branching end of said branch waveguide polarizer/branching filter and a thin metal sheet inserted in said square waveguide.

6. (Previously Presented) The waveguide group branching filter according to claim 1, further comprising a circularly polarized wave generator connected between the input port and the circular-to-square waveguide multistage transformer and composed of a circular waveguide and a dielectric plate inserted in the circular waveguide.

7. (Previously Presented) The waveguide group branching filter according to claim 1, further comprising a circularly polarized wave generator connected between the input port and the circular-to-square waveguide multistage transformer and composed of a circular waveguide and a plurality of metal pins mounted on the side wall of the circular waveguide.

8. (Previously Presented) The waveguide group branching filter according to claim 1, further comprising a circularly polarized wave generator connected between the input port and the circular-to-square waveguide multistage transformer and composed of a circular waveguide and a plurality of grooves cut in the side wall of the circular waveguide.

9. (Previously Presented) The waveguide group branching filter according to claim 1, wherein the first, second and third waveguide frequency filters are waveguide band-pass filters and wherein:

the first waveguide band-pass filter is formed by n rectangular cavity resonators and n iris-type coupling holes;

the second waveguide band-pass filter is formed by m rectangular cavity resonators and m+1 iris-type coupling holes; and

the third waveguide band-pass filter is formed by n rectangular cavity resonators and n+1 iris-type coupling holes.

10. (Previously Presented) The waveguide group branching filter according to claim 1, wherein the first, second and third waveguide frequency filters are waveguide band-pass filters and wherein:

the second waveguide band-pass filter is formed by m rectangular cavity resonators and 2m+2 post-type coupling holes; or

the third waveguide band-pass filter is formed by n rectangular cavity resonators and 2n+2 post-type coupling holes.

11. (Previously Presented) The waveguide group branching filter according to claim 1, wherein the first, second and third waveguide frequency filters are waveguide band-pass filters and wherein:

the second waveguide band-pass filter is formed by m rectangular cavity resonators and 3m+3 double-post-type coupling holes; or

the third waveguide band-pass filter is formed by n rectangular cavity resonators and 3n+3 double-post-type coupling holes.

12. (Previously Presented) The waveguide group branching filter according to claim 1, wherein:

at least one of the first and third waveguide frequency filters is a waveguide low-pass filter formed by a corrugated or stepped rectangular waveguide.

13. (Previously Presented) The waveguide group branching filter according to claim 1, wherein:

the second waveguide frequency filter is replaced with a waveguide high-pass filter formed by a corrugated or stepped rectangular waveguide.

14. (Previously Presented) The waveguide group branching filter according to claim 1, further comprising:

a rectangular waveguide E-plane T-branch circuit connected to the branching end of the branch waveguide polarizer/branching filter and the first waveguide band-pass filter; and

a fourth waveguide frequency filter connected to the rectangular waveguide E-plane T-branch circuit,

wherein:

a fourth radio wave of the second frequency band which has the same polarization plane as that of the second radio wave is incident to the input port, the fourth radio wave being cut off by said branch waveguide polarizer/branching filter and first waveguide frequency filter and being emitted from said fourth waveguide frequency filter.

15. (Previously Presented) The waveguide group branching filter according to claim 14, wherein:

the first and third waveguide frequency filters are waveguide band-pass filters each formed by n rectangular cavity resonators and n+1 iris-type coupling holes; and

the second and fourth waveguide frequency filters are waveguide band-pass filters each formed by m rectangular cavity resonators and m+1 iris-type coupling holes.

16. (Previously Presented) The waveguide group branching filter according to claim 14, wherein the fourth waveguide frequency filter is a waveguide high-pass filter formed by a corrugated or stepped rectangular waveguide.

17. (Currently Amended) A waveguide group branching filter comprising:

a bore within a solid metal block, the bore including portions of varying shapes including,

a transforming portion configured to receive a plurality of radio waves from an input port and transform the received radio waves from modes compatible with circular waveguides to modes compatible with rectangular waveguides;

a branching portion operably connected to the ~~multistage~~ transforming portion; and

a plurality of waveguide filtering portions operably connected to the branching portion,

wherein the branching portion is configured to route the transformed radio waves to the waveguide filtering portions, the waveguide filtering portions being configured to emit each of the transformed radio waves through a corresponding one of a plurality of output ports.

18. (Previously Presented) The waveguide group branching filter according to claim 17, wherein the bore further comprises:

a rectangular waveguide multistage transforming portion operably connecting the branching portion to the waveguide filtering portions, the rectangular waveguide multistage transforming portion being configured to reflect transformed radio waves of a first polarization plane and accept radio waves of a second polarization plane,

wherein the waveguide filtering portions include a first, second and third waveguide filtering portions, the first waveguide filter being operable to filter a predetermined radio wave and to emit the reflected radio waves through a first output port, the second and third waveguide filters being configured to filter predetermined radio waves and to emit selected ones of the accepted radio waves through second and third output ports, respectively.

19. (Previously Presented) The waveguide group branching filter according to claim 18, wherein the first, second and third waveguide filtering portions are configured as waveguide band-pass filters.

20. (Previously Presented) The waveguide group branching filter according to claim 19, wherein the first waveguide filtering portion includes n ($n \geq 1$) rectangular cavity resonators and n iris-type coupling holes.

21. (Previously Presented) The waveguide group branching filter according to claim 20, wherein

the second waveguide filtering portion includes m ($m \geq 1$) rectangular cavity resonators and m+1 iris-type coupling holes; and

the third waveguide filtering portion includes n rectangular cavity resonators and n+1 iris-type coupling holes.

22. (Previously Presented) The waveguide group branching filter according to claim 19, wherein

the second waveguide filtering portion includes m ($m \geq 1$) rectangular cavity resonators and 2m+2 post-type coupling holes; and

the third waveguide filtering portion includes n ($n \geq 1$) rectangular cavity resonators and 2n+2 post-type coupling holes.

23. (Previously Presented) The waveguide group branching filter according to claim 19, wherein

the second waveguide filtering portion includes m ($m \geq 1$) rectangular cavity resonators and 3m+3 post-type coupling holes; and

the third waveguide filtering portion includes n ($n \geq 1$) rectangular cavity resonators and 3n+3 post-type coupling holes.

24. (Previously Presented) The waveguide group branching filter according to claim 19, wherein at least one of the waveguide filtering portions is configured as a corrugated or stepped rectangular waveguide.

25. (Previously Presented) The waveguide group branching filter according to claim 24, wherein the corrugated or stepped rectangular waveguide is configured to operate as a lowpass filter.

26. (Previously Presented) The waveguide group branching filter according to claim 24, wherein the corrugated or stepped rectangular waveguide is configured to operate as a highpass filter.

27. (Previously Presented) The waveguide group branching filter according to claim 24, wherein the second waveguide filtering portion is

configured to operate as a lowpass filter, and the third waveguide filtering portion is configured to operate as a highpass filter.

28. (Previously Presented) The waveguide group branching filter according to claim 17, wherein the branching portion is a rectangular waveguide, further comprising

a metal sheet disposed within the branching portion.

29. (Previously Presented) The waveguide group branching filter according to claim 17, wherein the transforming portion includes,

a polarizing portion configured to polarize the received radio waves as right- and left-handed polarized radio waves, the transforming portion being configured to transform the polarized waves from modes compatible with circular waveguides to modes compatible with rectangular waveguides.

30. (Previously Presented) The waveguide group branching filter according to claim 29, wherein the polarizing portion is configured as a circular waveguide in which a dielectric sheet is disposed.

31. (Previously Presented) The waveguide group branching filter according to claim 29, wherein the polarizing portion is configured as a circular

waveguide and a plurality of metal pins mounted on a sidewall of the circular waveguide.

32. (Previously Presented) The waveguide group branching filter according to claim 29, wherein the polarizing portion is configured as a circular waveguide whose sidewall includes a plurality of grooves.

33. (Previously Presented) A method of manufacturing a waveguide group branching filter, comprising:

boring surfaces of each of two metal blocks,

wherein a circuit structure is formed by the two bored surfaces, when the metal blocks are assembled together, the circuit structure being operable to receive a plurality radio waves, transform the received radio waves from modes compatible with circular waveguides into modes compatible with rectangular waveguides, and filtering the transformed radio waves, and emitting each filtered radio wave from a corresponding one of a plurality of output ports.

34. (Previously Presented) The method according to claim 33, wherein the boring step includes:

boring portions of the surface of each metal block so that, when the metal blocks are assembled together, the circuit structure includes:

a transforming portion configured to receive a plurality of radio waves from an input port and transform the received radio waves from modes compatible with circular waveguides to modes compatible with rectangular waveguides;

a branching portion operably connected to the multistage portion; and

a plurality of waveguide filtering portions operably connected to the branching portion,

wherein the branching portion is configured to route the transformed radio waves to the waveguide filtering portions, the waveguide filtering portions being configured to filter predetermined radio waves and to emit each of the transformed radio waves through a corresponding one of a plurality of output ports.

35. (Previously Presented) The method according to claim 34, wherein the boring step includes,

boring a portion of the surface of each metal block so that, when the metal blocks are assembled together, the circuit structure further includes:

a rectangular waveguide multistage transforming portion operably connecting the branching portion to the waveguide filtering portions, the rectangular waveguide multistage transforming portion being configured to

reflect transformed radio waves of a first polarization plane and accept radio waves of a second polarization plane,

wherein the waveguide frequency filtering portions include a first, second and third waveguide frequency filtering portions, the first waveguide frequency filter being operable to filter a predetermined radio wave and to emit the reflected radio waves through a first output port, the second and third waveguide frequency filters being configured to filter predetermined radio waves and to emit selected ones of the accepted radio waves through second and third output ports, respectively.

36. (Previously Presented) The method according to claim 34, wherein the boring step includes,

boring a portion of the surface of each metal block so that, when the metal blocks are assembled together, the circuit structure further includes:

a polarizing portion configured to polarize the received radio waves as right- and left-handed polarized radio waves, the transforming portion being configured to transform the polarized waves from modes compatible with circular waveguides to modes compatible with rectangular waveguides.

37. (Previously Presented) A waveguide group branching filter manufactured according to the method of claim 34.

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Fig. 1. This sheet replaces the original sheet including Fig. 1. In Fig. 1, the label "Conventional Art" has been added.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes